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They have not jugular ventrals and should be removed to other parts of the system.

The Chiasmodontidæ (including Chiasmodon, Pseudoscopelus, and apparently Champsodon) have the ventrals rather abdominal than thoracic, not being connected with the pectoral arch, or in Champsodon joined by ligament only. These may be Percesoces, but that is very unlikely and their real affinities are doubtful.

The Trichodontidæ (Trichodon and Arctoscopus) are percoids, most nearly related to the Latrididæ.

The Sillaginidæ are, as supposed by Cavier, most nearly allied to the Sciænidæ.

Most of the remaining genera agree closely in skeletal characters, notwithstanding their variations in external appearance, and their actual relationships are altogether percoid, approaching closely to the genus Plesiops, which Boulenger ranges among the Serranidæ of the Anthias group. These constitute the family Pseudochromidæ, composed of Pseudochromis, Cichlops, Opistognathus, Latilus, Caulolatilus, Malacanthus, Bathymaster, and their allies. This family seems to the writer still very heterogeneous. Bathymaster has a greatly increased number of vertebræ, Pseudochromis has two lateral lines, and Opisthognathus differs superficially in many ways from Latilus. Cepola, not mentioned by Boulenger, must lie near this group as a distinct family, Cepolidæ. Pinguipes differs from all this in lacking the supraocular lamina. It forms a distinct family, Pinguipedidæ.

D. S. J.

Jordan on Distribution of Fishes. — In *Science*, Dr. Jordan has an extended account of the origin of the fish fauna of Japan, with deductions of general application from the relation of the Japanese fauna to those of other regions.

He finds no evidence from the fishes of a direct connection between Japan and the Mediterranean, and no evidence of the submergence of the Isthmus of Suez. In the large identity of genera, and the divergence of species on the two sides of the Isthmus of Panama, he finds evidence of former submergence (perhaps Miocene) but none during the lifetime of the present species. He does not find in the wide distribution of the Antarctic fresh-water troutlike genus, Galaxias, certain evidence of the former union of South America and Australia in Antarctic Continent, but would accept the theory on geological evidence.

In a note in a subsequent number of *Science*, Dr. A. E. Ortmann claims the existence of adequate geological evidence of the former extension of the continent "Antarctica." In this case the distribution of *Galaxias* would be easily explained, but it could be conceivably explained without it. Dr. Ortmann notes also evidence of the faunal union of Japan with Europe when the climate of Siberia was much warmer than now. This evidence is drawn from the distribution of Crustacea. The distribution of the fishes does not, however, yield evidence of this kind.

D. S. J.

Jordan and Snyder on the Puffing Fishes of Japan. — In the *Proceedings of the United States National Museum*, Jordan and Snyder continue their monographic reviews of the fishes of Japan, treating of the gymnodont fishes, or puffers. Twenty-seven species are described, belonging to eight genera. Four new species are figured, besides several previously known. The authors unite the genus *Lagocephalus* with *Spheroides*, finding a continuous series from one extreme to the other. In like manner, *Ovoides* is merged into *Tetraodon*.

D. S. J.

Kerr on the Paired Limbs of Vertebrates. — In the *Proceedings of the Cambridge Philosophical Society*, Mr. Kerr discusses the question of the origin of the paired limbs in vertebrates. He finds the view of Balfour and others, that these limbs had their origin in a lateral fold, without adequate support in fact or in theoretical considerations.

The view of Gegenbaur, that they arose from modification of the gill septa separating gill slits, he also criticises unfavorably.

As a provisional hypothesis he brings forward the theory, already foreshadowed by others, that the vertebrate limbs are modified external gills. The close association of the fore limbs and gills shown in Mr. Kerr's plates of the young *Lepidosiren*, in another paper, seems to lend color to this theory.

D. S. J.

Notes on Fishes. — Professor Alfredo Dugès of Guanajuato has recently sent a bottle of little fishes taken in the very hot spring at Ixtlan, in the northwestern part of the Mexican state of Michoacan. These belong to the species described by Woolman as *Gambusia infans*. It is a valid species, distinguished by its small size and plain color among other things, but the original description is at fault in